

b) at least one modified nucleic acid, comprising a nucleic acid and a linker moiety having a first and second end, wherein said first end of said linker is attached to said electrode and said second end is attached to said nucleic acid;

c) wherein said blocking moieties, together with said modified nucleic acid form a self assembled monolayer; and,

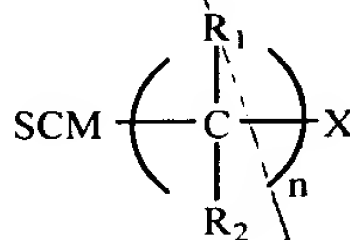
wherein at least two different regions comprise different nucleic acids.

16. An array according to claim 15 wherein said first end of said blocking moieties is attached to said electrode via a sulfur linkage.

17. An array according to claim 15 wherein said first end of said linker is attached to said electrode via a sulfur linkage.

18. An array according to claim 15, 16 or 17 wherein each electrode comprises gold.

19. An array according to claim 15 wherein said blocking moieties have the formula:



wherein

SCM is a sulfur-containing moiety, wherein said sulfur containing moiety is attached to said electrode;

R_1 and R_2 are independently selected from the group consisting of hydrogen and substituent groups;

n is an integer from 3 to 50; and

X is a terminal group.

20. An array according to claim 19 wherein R_1 and R_2 are hydrogen.

21. An array according to claim 15 wherein said blocking moieties comprise alkyl.

22. An array according to claim 19, 20 or 21 wherein n is ≥ 6 .

23. An array according to claim 15 wherein said blocking moiety is a branched molecule.

24. An array according to claim 15 wherein said linker moiety is a straight chain alkyl group.

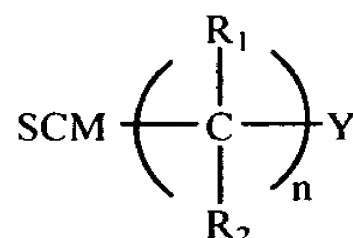
25. A straight chain alkyl group according to claim 24 wherein said chain ranges from 1 to 20 carbon atoms.

26. An array according to claim 15 wherein at least two of said blocking moieties are different.

27. An array according to claim 15 wherein at least one of said blocking moieties is a branched molecule.

28. An array according to claim 26 or 27 wherein at least one of said blocking moieties is an alkyl group.

29. An array according to claim 15 wherein said linker moiety has the formula:



wherein

SCM is a sulfur-containing moiety, wherein said sulfur containing moiety is attached to said electrode;

R₁ and R₂ are independently selected from the group consisting of hydrogen and substituent groups;

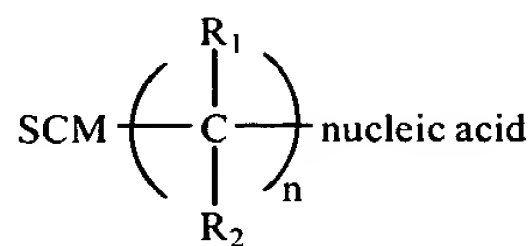
n is an integer from 3 to 50; and

Y is the point of attachment for a nucleic acid.

30. An array according to claim 29 wherein said linker moiety is a straight chain alkyl group.

31. A straight chain alkyl group according to claim 30 wherein said chain ranges from 1 to 20 carbon atoms.

32. An array according to claim 15 wherein said modified nucleic acids have the formula:



wherein

SCM is a sulfur-containing moiety, wherein said sulfur containing moiety is attached to said electrode;

R₁ and R₂ are independently selected from the group consisting of hydrogen and substituent groups; and

n is an integer from 3 to 50.

33. An array according to claim 32 wherein R₁ and R₂ are hydrogen.

34. An array according to claim 29, 32 or 33 wherein n is ≥ 6.

35. An array according to claim 15 wherein said blocking moiety comprises a phosphorus-containing moiety.

36. An array according to claim 15 wherein said nucleic acid is attached to said linker at a 2' position of a ribose.

37. An array according to claim 15 wherein said nucleic acid is attached to said linker at a 3' position of a ribose.

38. An array according to claim 15 wherein said nucleic acid is attached to said linker at a base of said nucleic acid.

39. An array according to claim 15 wherein said nucleic acid is attached to said linker at a phosphate linkage of said nucleic acid.

40. An array according to claim 15 wherein said solid support is glass.

41. An array according to claim 15 wherein said solid support is plastic.

42. A method of detecting a mismatch, said method comprising adding a target nucleic acid to an array of probe nucleic acids comprising a solid support having a plurality of regions, each region comprising an electrode comprising a self-assembled mixed monolayer comprising:

a) blocking moieties, having a first end attached to said electrode, wherein said blocking moieties shield nucleic acids from said electrode;

b) at least one modified nucleic acid comprising a probe nucleic acid and a linker moiety having a first and second end, wherein said first end of said linker is attached to said solid support and said second end is attached to said nucleic acid;

c) adding an agent that distinguishes between single- and double-stranded nucleic acids;

wherein at least two different regions comprise different probe nucleic acids;
under conditions wherein at least one of said probe nucleic acids and said target nucleic acid will hybridize to form a hybridization complex.

43. A method according to claim 42 wherein said agent is an intercalating agent.

44. A method of detecting a mismatch, said method comprising adding a target nucleic acid to an array of probe nucleic acids comprising a solid support having a plurality of regions, each region comprising an electrode comprising a self-assembled mixed monolayer comprising:

- a) blocking moieties, having a first end attached to said electrode, wherein said blocking moieties shield nucleic acids from said electrode;
- b) at least one modified nucleic acid comprising a probe nucleic acid and a linker moiety having a first and second end, wherein said first end of said linker is attached to said solid support and said second end is attached to said nucleic acid;
- c) wherein said blocking moieties, together with said modified nucleic acid form a self assembled monolayer;

wherein at least two different regions comprise different probe nucleic acids;
under conditions wherein at least one of said probe nucleic acids and said target nucleic acid will hybridize to form a hybridization complex.

45. A method according to claim 44 wherein said target nucleic acid is labeled.

46. A method according to claim 42 or 44 wherein said blocking moiety is a branched molecule.

47. A method according to claim 42 or 44 wherein at least two of said blocking moieties are different.